

**WHAT IS CLAIMED IS:**

1. A system for outputting a signal representative of the angular position of a rotatable member, comprising:

a ring magnet couplable to the rotatable member, the magnet defining magnetic flux lines, portions of the magnetic flux lines being main flux lines emanating away from the magnet and portions of the magnetic flux lines being return flux lines returning to the magnet; and

at least one magnetic field sensor disposed in at least one return flux line and outputting a signal representative of the angular position of the magnet.

2. The system of Claim 1, wherein the sensor is disposed radially outside of an outer diameter of the magnet.

3. The system of Claim 1, wherein the sensor is a Hall effect sensor.

4. The system of Claim 1, wherein the sensor is oriented to sense a radial component of magnetic flux.

5. The system of Claim 4, wherein the sensor is located in a return flux line at a location where the return flux line is substantially parallel to an annular surface of the magnet.

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6. The system of Claim 1, wherein the sensor is oriented to sense an axial component of magnetic flux.

7. The system of Claim 6, wherein the magnet defines a central axis and a plane perpendicular to the axis, the sensor being disposed substantially in the plane.

8. The system of Claim 1, wherein the rotatable member is a vehicle component.

9. A method for determining an angular position of a rotatable member, comprising:

providing a disk-shaped magnet defining magnetic flux lines, portions of the magnetic flux lines being main flux lines and portions of the magnetic flux lines being return flux lines returning to the magnet; sensing magnetic flux in at least one return flux line; and outputting a signal representative of the angular position of the magnet, based on the sensing act.

10. The method of Claim 9, wherein the magnet is annular.

11. The method of Claim 9, wherein the sensor is a Hall effect sensor.

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12. The method of Claim 9, comprising orienting the sensor to sense a radial component of magnetic flux.

13. The method of Claim 12, comprising locating the sensor in a return flux line at a location where the return flux line is substantially parallel to an annular surface of the magnet.

14. The method of Claim 9, comprising orienting the sensor to sense an axial component of magnetic flux.

15. The method of Claim 14, wherein the magnet defines a central axis and a plane perpendicular to the axis, the method including disposing the sensor substantially in the plane.

16. The method of Claim 9, wherein the rotatable member is a vehicle component.

17. An angular position sensing system, comprising:  
magnet means for generating a magnetic field; and  
sensing means disposed in return flux lines generated by the magnet means for outputting a signal representative of an angular position.

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18. The system of Claim 17, wherein the magnet means is a ring magnet and the sensing means is a sensor.

19 The system of Claim 18, wherein the sensor is a Hall effect sensor.

20. The system of Claim 18, wherein the sensor is oriented to sense a radial component of magnetic flux.

21. The system of Claim 20, wherein the sensor is located in a return flux line at a location where the return flux line is substantially parallel to an annular surface of the magnet.

22. The system of Claim 18, wherein the sensor is oriented to sense an axial component of magnetic flux.

23. The magnet of Claim 22, wherein the magnet defines a central axis and a plane perpendicular to the axis, the sensor being disposed substantially in the plane.

24. The method of Claim 17, comprising a rotatable vehicle component coupled to the magnet means.